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AN ANALYSIS OF THE POTENTIAL UTILIZATION OF THE U. S. NAVY BUREAU OF YARDS AND DOCKS TECHNICAL ASSISTANCE TO LESSER DEVELOPED COUNTRIES

by
JOHN FRANCIS O'LEARY

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ABSTRACT

AN ANALYSIS OF THE POTENTIAL
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Submitted to the Department of Civil Engineering on 23 August 1966, in partial fulfillment of the requirements for the degree of Master of Science in Civil Engineering.

In Part I, a rather detailed investigation is made of the question of whether or not the U. S. Navy Bureau of Yards and Docks should become involved with a program of technical assistance to lesser developed countries. The results of this investigation indicate that the advantages to both the Bureau of Yards and Docks and to the countries receiving such assistance far outweigh the objections to and the disadvantages of such a program.

An analysis is made in Part II of the need for technical assistance in the Latin American and African areas based primarily on the local availability of such services as evidenced by the restrictions placed on the practice of engineering in the individual countries concerned. It is concluded that, although a definite need for such assistance still exists in Latin America, the greater need lies in the emerging African nations.

Finally in Part III, the details of organizing and initiating an African technical assistance program are developed by utilizing as a starting point the Federal Republic of Nigeria. Also included in Part III are the reasons for the selection of that particular country as the initial focal point for such a program.

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PART I

APOLOGIA

A. Mission of The Bureau of Yards and Docks

It is of paramount importance that, before proceeding further, we first determine whether or not the U. S. Navy's Bureau of Yards and Docks (BUDOCKS) can and should have a definite role assigned in the future history of developing foreign nations. The only part it can play is encompassed in the area of providing technical assistance, advice, information and services, which will henceforth be collected under the categorical title of technical assistance and the exact nature of which will be described in detail at a more appropriate place in this paper. The provision of such technical assistance to a foreign government can be and all too often is fraught with very broad, complex and frustrating problems. If it is really not within the purview or responsibility of the BUDOCKS organization to become involved in this area of endeavor, then to do so would be to incur an injustice upon itself and the U. S. Navy by needlessly complicating the task of accomplishing its assigned military mission. Let us, therefore, first examine this mission and attempt to discover whether or not such a role is included therein, either explicitly or implicitly and, if so, to define the interface of such a role with the objectives of the Bureau as a military construction organization.

The responsibilities of the Chief of the Bureau of Yards and Docks have been officially assigned as follows: "The Chief of the Bureau of Yards and Docks under the Chief of Naval Material, shall supervise and command all functions and activities of the Bureau of Yards and Docks, including shore activities in providing the material support needs of the Operating Forces of the Navy, the Marine Corps, the other elements of the Naval Material Support Establishment and the other Supporting

Organizations, and for Naval Construction Force support matters. The Chief of the Bureau of Yards and Docks as the Chief of Civil Engineers shall act as principal advisor to the Chief of Naval Operations and the Chief of Naval Personnel for military manpower management matters related to the Corps of Civil Engineers."[1]

Broad though that statement may be, the perceptive reader will note immediately that it can hardly be construed to encompass, explicitly or even implicitly, the provision of BUDOCKS technical assistance to any foreign nation, developed or lesser developed, and one may well ponder once again exactly why and how this U. S. military construction organization can and should become engaged in such activities. The answer of course is simply that the provision of technical assistance to foreign nations is not included within the assigned mission of the Chief of the Bureau of Yards and Docks. This point is extremely significant for reasons some of which may be obvious and others of which will be elaborated upon shortly but fortunately it is not the whole story. So for now let it just be well noted and, rather than stop at this apparent impasse, let us probe a bit further into the question.

To be able to satisfactorily and successfully cope with the rather broad statement of responsibilities iterated above, the Chief of the Bureau of Yards and Docks has also been given a compensatingly broad delegation of authority within established statutory and regulatory limitations. An example of this delegation of authority is contained in Article 0404 of U. S. Navy Regulations entitled "Manuals and Other Publications" which reads as follows: "The Naval Technical Assistants," which includes the Chief of the Bureau of Yards and

Docks among others," shall prepare and issue manuals and other appropriate publications containing orders, instructions and procedures, conforming to these regulations, and pertaining to matters under their control. They shall insure that these publications accurately delineate their respective fields of authority, as mutually agreed upon by the bureaus and offices concerned, and in conformity with decisions or policies of higher authority."[2] In exercising this prerogative, the Chief of the Bureau of Yards and Docks, having been assigned the responsibility for the effective and efficient accomplishment of the BUDOCKS mission, has established the following basic objectives for the Civil Engineer Corps (CEC) and the Bureau of Yards and Docks:

"1. To direct the Civil Engineering effort in the Navy toward:

(a) Attaining maximum effectiveness and economy throughout the shore activities of the Department of the Navy by employment of the best engineering practices in the conduct of governmental business.

(b) Supporting to the maximum possible extent the military requirements of the Chief of Naval Operations and the Commandant of the Marine Corps.

2. To extend Civil Engineer Corps and Bureau of Yards and Docks services into those areas where the job can be done most effectively by a military civil engineering organization."[3]

The first objective established by the Chief of the Bureau clearly relates to the accomplishment of the assigned BUDOCKS mission. The second, however, appearing as it were from nowhere, would seem to bear

no relation at all to BUDOCKS mission accomplishment. Indeed, it might easily be projected as possibly interfering with that same mission accomplishment by penetrating into areas that are neither the responsibility nor the concern of the Bureau and might also lead to charges of bureaucratic empire building. And yet the objective is there, clearly, forcefully and explicitly included in the very briefest outline of the Bureau's objectives. The choice of the word "extend" in relation to CEC and BUDOCKS services is also considered to be significant. The word is defined as "to stretch or draw out; to cause to reach."[4] The implications of the word are clear, that is, it implies an active rather than a passive approach to the question; a going out and doing rather than a waiting to be asked. It can be construed to imply a selling of such services as distasteful as the thought may be to some of the more rigorously professional minded personnel, both military and civilian, in the BUDOCKS organization. Regardless, the mandate is there and it is the obligation of all subordinates to strive to achieve this objective as stated. However, there are intelligent and dedicated military and civilian personnel within the BUDOCKS organization who seriously question such extraneous involvement and whose efforts in the pursuit of same are therefore half-hearted or, at best, far from enthusiastic. So rather than blindly accept this edict as a fait accompli, let us in the following paragraphs attempt to uncover the reasoning behind it and, while so doing, establish any limitations or restrictions involved therewith.

B. Technical Assistance - Yes or No?

1. Objections

It may be well before beginning the exploration of this question, to first define within the scope of this paper, the areas of such assistance. As indicated by the title, we will deal exclusively with BUDOCKS technical assistance to lesser developed countries. Such assistance to developed countries is hardly required with but few exceptions and, indeed, the proffering of same might be received as being downright insulting. Assistance to other U. S. Governmental Agencies is more readily and easily justified by Article 0416 of Navy Regulations entitled "Work Done for Other Bureaus, Offices, or Government Agencies" which reads in part: "Work may be performed by one bureau or office for another bureau or office, or for another Government agency, under such arrangements as are legal and agreeable to the parties concerned."[2] Such assistance is also well established as evidenced in the past by the BUDOCKS' administration of the Spanish Bases Construction Program for the U. S. Air Force and, at the present time, the administration of the U. S. Agency for International Development (USAID) Construction Program in Southeast Asia. Other U. S. Governmental Agencies and in particular USAID will appear on the scene, however, as they may relate to the activities in question. Further, we will not include within the scope of this paper BUDOCKS assistance to foreign navies under the Military Assistance Program (MAP) which, again, is more readily understood and justified and well established. However, again, foreign military establishments may well be encountered in our travels as they relate to the primary objective. Finally, we will not pursue the question, though there

certainly be one in the minds of some, as to whether or not the U. S. Government should, in general, provide assistance to lesser developed countries. The policies and programs of our Government leave little doubt as to its stand in this regard. This leaves us then to examine in detail the role, if any, of BUDOCKS in providing technical assistance to the non-military sectors of foreign governments in lesser developed nations.

Let us now launch our exploration of the question by first examining the objections to such assistance. The primary objection stems from the basic truism that providing such technical assistance is not included in the basic mission assigned to the Chief of the Bureau. With this there can be no argument and from it emanates the explanatory elaboration that such assistance therefore detracts from the accomplishment of that mission by diverting the Bureau's primary and most important resource, personnel, from their properly assigned tasks which must therefore suffer as a result. So at the very outset we must establish our first and most important restriction and one whose repercussions are rather widespread throughout all aspects of the question, and that is that any such technical assistance must in no way interfere with the primary military mission of the Bureau. This means that, using an oversimplified example, if there exists a requirement for a CEC officer in a U. S. Naval Construction Battalion and a concurrent request for the assistance of a similar CEC officer from a foreign government and only one such officer is available for assignment at that particular time, then there can be no question as to where the available officer must be sent. As mentioned previously, this can be a severe restriction but one which must be maintained. Now it might

appear to follow, with apparent logic, that if the BUDOCKS organization is properly staffed to begin with, then there should be no excess personnel available for such other assignments. It must be remembered, however, that, first of all, personnel requirements, particularly in a construction organization, fluctuate with the volume of business with the exception of personnel engaged in basic overhead functions. At the same time, organizational staffing must be maintained to a certain degree constant to avoid inefficient and damaging hiring and firing over short term business cycles. This principle of low personnel turnover applies to an even greater degree where career military and civilian civil service personnel are concerned. Secondly and even more important, the very nature of the functions of a military organization dictate that it be overstaffed to a certain level during times of relative peace in order to be able to respond immediately to mobilization requirements which cover the broad spectrum ranging from providing military advisors to an all out holocaust. What better evidence of this capability could we ask than the effective manner in which we have responded to the demands of the Viet Nam situation which have to date included the formation of four additional Mobile Construction Battalions (MCB's) and other very high demands on our personnel numbers considering the relatively small size of our organization. And yet the normal activities of the Bureau continue uninterruptedly. So there must exist at all times within the BUDOCKS organization a certain degree of over-staffing subject to short term fluctuations. However, it can be argued further that a reduction in the level of overstaffing by taking on outside work can result in a diminished capability to respond effectively to emergency requirements. But this only leads us back to our first

restriction that national military requirements take precedence over international assistance. Personnel engaged in such international efforts must therefore be considered as subject to immediate recall and re-assignment as is any officer or assignment within the BUDOCKS organization. So at this point, we are no worse or better off providing such assistance than we would be if we did not.

However, the question probes deeper into our personnel structure than that and it does so through the mechanism of what is termed a reimbursable billet. Now there is established for BUDOCKS as for any U. S. Governmental Agency a personnel ceiling which limits the numbers of military personnel in the Civil Engineer Corps and civilians in the BUDOCKS organization. However, when BUDOCKS personnel, civilian or military, are assigned to billets outside of the Bureau's mission, these ceilings are increased by the numbers of personnel so assigned. Hence the term reimbursable billets. This is allowable because the other organization must pay for such services and hence the personnel are not charged against the Bureau's budget. So we arrive at our second restriction on BUDOCKS' technical assistance, that is, that it must be performed on a financially reimbursable basis. This is only logical. We cannot expect to expend funds which have been appropriated by the U. S. Congress to support the national defense efforts of the U. S. Navy through defined BUDOCKS' activities, or the accomplishment of tasks not related thereto, however well intentioned or justified they may be. Indeed, if funds are available to support such efforts then we have asked for and received more financial support than we really need, a highly unlikely accomplishment in this age of severe and strict economic operating limitations and budget justifications and an equally undesirable

one. So we must establish this second restriction to the effect that all activities outside of the established mission of the Bureau must be performed on a financially reimbursable basis. This restriction answers the second objection to involvement in such efforts in that they are a needless drain on the already limited financial resources of the Bureau.

Returning once again to the reimbursable billet concept, it may appear on the surface that the question of availability of personnel is solved. Unfortunately this is not the case. What happens is that a request for assistance generally requires a man with the experience and maturity of a Lieutenant Commander or Commander or a comparably rated civilian. Such a man cannot be immediately replaced as it is practically impossible to pick another up off the street with comparable qualifications willing to begin a military or civil service career at that stage in his life. Instead, probably the best that can be done is to retain an additional Lieutenant Junior Grade who is completing his obligated service and applies for augmentation into the Regular Navy or to hire an additional young trainee into the civil service organization. In either case, there is a marked loss to the Bureau and perhaps the best that can be done is to relieve the Commander with a Lieutenant Commander, relieve the Lieutenant Commander with a Lieutenant, and relieve the Lieutenant with our new found Lieutenant Junior Grade. The result is obviously a reduction in the level of experience and maturity of personnel all along the line. However, to stop at this point is to be guilty of short-sightedness. For, first of all, we now have available a larger number of personnel that can be called upon to meet an emergency situation, remembering our requirement that military needs take priority. Secondly, if a certain number of such reimbursable billets can be

maintained within reasonable limits over a period of years, the personnel structure will once again become stabilized. Finally, if the number of such billets cannot be maintained then the future effects are self-compensating, that is, we will eventually regain the services of our more experienced personnel, and, at that time, merely retain fewer junior officers or hire fewer civilian trainees. In the interim we will have had the benefit of insurance in the form of additional numbers of personnel. Indeed, returning to the Viet Nam situation, one may well ponder how much more easily the demands on our personnel numbers might have been met if we had had personnel throughout the lesser developed nations who could have been available for the required assignments. The key to the system and our third restriction is only that such efforts must be accepted on a very gradual basis to allow a slow and careful building up of the base of our personnel structure and thereby avoid any sudden and disruptive personnel demands. This is really only a matter of common sense and exercising discretion in offering our services and accepting resultant requests therefor.

Another real objection to BUDOCKS' technical assistance to lesser developed nations is the question of competition with private enterprise. This problem is a real one and more difficult to define in precise terms than the others, for there are conflicting restrictions and requirements involved. For example and on the one hand, we are definitely restricted in our use of U. S. Naval Construction Forces (SEABEES) as follows: "It is not Navy policy to employ MCB's in competition with civilian labor in the continental United States or on the mainland of Alaska. However, exceptions may be made for training purposes when the nature of the work necessitates security that could not otherwise be assured, or where the

isolated location of the work to be performed makes it impractical to obtain qualified civilian contractors. Lack of funds is not sufficient justification for the use of military construction units."[5] Here the question of competition with civilian labor is clearly defined. However, while utilizing to a very large extent the services of private A/E's and consultants for our design efforts we also recognize the need to maintain a certain degree of in-house design capability as evidenced by our design staffs within the Bureau and its major field activities. Certainly by so doing we are competing in a sense with private enterprise but we recognize the need to do so. So, again, the problem is not very clearly defined in terms of competition with private enterprise here in the United States and far less so elsewhere as the implication of the above quote is that, at least in so far as the U. S. Navy is concerned, we are perfectly free to use our SEABEES in competition with civilian labor anywhere else in the world. Yet we obviously have at least a moral obligation to exercise at least the same restraint and prudence in our international dealings as we would and do here at home. This is recognized by the Chief of the Bureau and due consideration thereof given as evidenced by the inclusion of the phrase "where the job can be done most effectively by a military civil engineering organization" in the previously quoted second objective for the CEC and the Bureau relating to the extension of our services. Granted the determination of whether or not a job can be done most effectively by a military or by a civilian civil engineering organization can become a rather nebulous thing. The military may have the advantage in terms of speed of mobilization; the fact that it is a non-profit organization; training and experience in working under extremely adverse conditions; built-in

self sufficiency in terms of administrative, logistic and medical capabilities; power to assign competent personnel to locations and projects where recruitment of civilians may be impossible or at best extremely costly; backup available in the very large and world wide BUDOCKS organization; or a host of other perhaps less obvious reasons. But regardless of the logic the point in the case in question is that such a determination can only be made by the proper authorities in the nation concerned whose responsibility it is to determine what is in the national interest of the country, assuming of course a duly constituted or representative government as evidenced by official U. S. recognition thereof. So while this may appear to be passing the buck as it were, the question of competition with private enterprise can only be determined on a case by case basis by the nation concerned, one way or the other, just as it has been and is here in our own country.

The last real objection, though it stems from one isolated happenstance, is an important one and it relates to the real loss of personnel through the medium of outside technical assistance as follows. Well over ten years ago, one of our CEC officers was assigned to another U. S. Governmental Agency to supervise that agency's construction program in a particular overseas area. As a result of the strong and repeated requests of that agency to have the officer remain because of their satisfaction with his efforts and his own requests to remain for personal reasons, he was permitted to do so and there he remained until his retirement several years ago whereupon he continued in the job in a civilian capacity. The point is that his services were completely lost to the Bureau which, had it been compelled to recall him to meet an emergency situation, would have found him to be of considerably less

value than his rank would indicate because of his prolonged absence and lack of familiarity with changing policies and procedures resulting therefrom. So we must establish our fifth and final restriction that personnel assigned outside the Bureau organization be permitted to remain so assigned for only one normal tour of duty within the usual allowable limits of that phrase.

The only real flaw in all of the above goes back to the first restriction that such technical assistance must not interfere with the accomplishment of the Bureau's primary mission. It is highly conceivable that the situation will arise when the services of personnel who are assigned to a foreign governmental agency will be required for certain tasks within the Bureau organization. It is also conceivable that, in spite of our concept of immediate availability of such personnel for Navy missions, it may be politically inadvisable at the time to remove such personnel from the country concerned because of the importance of a project or program to that country or for other reasons. So our concept of immediate availability is subject to breakdown. However, we can not exist solely in the vacuum of the Navy construction organization. If it is determined that a need exists which is greater than our own then we must submit to the fact. Indeed the existence of such a need only serves to prove the value of the technical assistance concept and our own needs are always subject to and lesser than the overall needs of our country.

2. Advantages

Merely answering the objections to BUDOCKS' technical assistance to lesser developed countries is not, however, enough to justify such assistance. We should now proceed further and explore the advantages of this

assistance to the Bureau, our own country and the country concerned. But before so doing, let us summarize the restrictions we have arrived at in the process of investigation:

1. That such assistance must in no way interfere with the primary military mission of the Bureau except in such instances where it is in the overall interest of our nation to do so.
2. That it must be performed on a financially reimbursable basis.
3. That such efforts must be accepted on a gradual basis to avoid sudden and disruptive changes to our personnel structure.
4. That the question of competition with private enterprise can only be resolved by the nation concerned.
5. That personnel assigned outside the Bureau organization be permitted to remain so assigned for only one normal tour of duty within the usual allowable limits of that phrase.

With these restrictions as a base, let us now proceed to explore the advantages of the system, some of which have already been touched upon.

The advantages to BUDOCKS are few but significant. We have already noted the primary advantage in the building up of a broader and larger base of personnel. As more and more personnel are assigned to work outside the Bureau's primary military mission, these numbers can become significant and provide the insurance of additional personnel over the Bureau's established ceilings. These personnel would be available to meet emergency situations as they may arise. But this is not the whole story. There is, in addition, the more intangible advantage of more diversified experience and greater responsibility for the personnel assigned. It has been the writer's experience in Latin America and

generally speaking that of others who have been engaged in similar efforts throughout the world and with whom the writer has had an opportunity to discuss the subject, that our personnel on such assignments find themselves in the sometimes embarrassing but always challenging position of being considered as expert in all civil engineering matters in the very broadest sense of the term. To cite but a very few examples, our personnel have been asked to pass judgement on the final planning for a complete port facility including a completely automated system of banana handling equipment; the agricultural as well as the structural features of flood prevention and control for an entire city; disaster relief planning on a national level; and the feasibility of nuclear power generating plants in remote and forbidding areas. Extreme care must always be exercised in such a position for it has happened more than once that an answer to a seemingly innocuous question has become a matter of national policy the following day. But the rewards in terms of personal maturity and mental stimulation resulting from such challenging and diversified experiences are immeasurable and of the greatest value to the individual and to the Bureau. Finally, there is the advantage of furthering the world-wide name and reputation of the Bureau and the Corps (CEC), an item which should always be in the minds of us all.

Going beyond the interests of the Bureau and the Corps, there are benefits to be reaped from such a program at the National level. Many of the major development programs and projects in lesser developed countries are wholly or in part U. S. financed. What better way to insure their efficient execution than to have a non-profit U. S. civil engineering organization with years of world-wide experience assist

therewith? What better way to further our overall goals of the foreign assistance program than to provide the technical assistance on a business-like paying basis in addition to the funding which by itself is so often resented? What better way to extend the feeling of mutual cooperation than to work side by side with foreign nationals in helping them to achieve their dreams of national development? And what better way to obtain the sorely needed economic project analyses and justifications, more of which will be said later, than to have assisting in the preparation thereof personnel who have had to perform the same exacting analyses to obtain the required funding for every project or program that the Bureau has requested? In the opinion of the writer, the fruits of such a program at the national level are even more inviting than those at the Bureau level and we must always keep our sights at this broader overview of the situation.

But we have dwelt long enough on our own selfish motives for such a program. Let us now put ourselves in the position of the governmental authorities of a lesser developed nation and investigate the advantages, if any, available to that nation in the utilization of our proffered services. The first and obvious one is the financial savings potential in utilizing a non-profit organization. But the financial story does not end there. As a result of our relatively low pay scales, both military and civilian, the charges for such services which would include only actual costs of salaries, expenses and materials plus overhead, must be considerably lower than a private firm, particularly in less desirable areas where a contractor must pay a high premium to obtain qualified and competent personnel. In addition and continuing in a financial vein, our extensive organization with well

staffed offices throughout the world means that, with few exceptions, available personnel are greater in number and within closer proximity than almost any private U. S. firm, therby reducing mobilization and travel expenses. These items when summed together would, on their own present an excellent argument for the utilization of our services but there are aspects other than financial that are equally advantageous. An extremely important part of any such assistance program is the training of local personnel so that the financing agency, whether it be the U. S. or the country concerned, can look ahead to the day when such assistance is no longer required and the country becomes self-sufficient in the particular area of endeavor. The objective of the trainer then becomes working oneself out of a job. This particular prospect is not a particularly inviting one to a profit oriented organization which generally speaking, would much prefer to do the work itself and continue doing it than to train another organization to take its place. As a result, even if a private firm were to accept the task, the transformation is apt to be slow and extended at best. But even disregarding this hypothesis, it is proposed that the Bureau has had far more and diversified experience in the area of training than any private firm known to the writer. Training and readiness are the primary objectives of a military organization and with its inherent relatively high turnover rate, the process is a continuous and well developed one. There are certainly other advantages previously noted in terms of speed of response; training and experience in working under extremely adverse conditions; built-in self sufficiency; and BUDOCKS backup. But the real meat of the situation lies in the areas of cost and training. It is on these items that the country

concerned should give considerable thought and reflection.

3. Disadvantages

It would be less than objective to contend that there are no disadvantages inherent in BUDOCKS technical assistance to lesser developed countries. The only real one in so far as the Bureau and our Nation are concerned is taking upon ourselves more responsibility than we really need to, if we disregard for the moment any sense of moral obligation that we may feel. In addition to merely complicating our lives and our efforts with this extraneous work, we could conceivably place ourselves and our Country in a most embarrassing and distasteful light in the eyes of the whole world through, for example, a major engineering blunder or even as a result of political, economic or social conditions which are completely beyond our control. It is the contention of the writer however that we must place our trust and confidence in our own capabilities and be always ready and willing to put our reputation on the line in conjunction with our best efforts. Further, we must be ever ready to accept new challenges and responsibilities because there is in this life no standing still. We must either press forward successfully as we have in the past or regress into stagnation and eventually, oblivion, a rather strong statement but one borne out daily in the histories of organizations and even nations. Finally, we cannot ignore our moral obligation to do our part and bear our share of the load in the development of emerging nations.

The possible disadvantages to a recipient nation are several. There is the ever present sword of Damacles in the potential recall of our personnel in an emergency situation, perhaps at a crucial time in a project or program in that country. Without dismissing the threat

too lightly, such an eventuality is not considered to be too likely. We would certainly be reluctant if only for political reasons to leave a nation high and dry at a critical time. A good case in point is the history of two of our CEC officers assigned to the Brazilian and Chilean Navies as civil engineering advisors. Each billet was established as one two year tour of duty. Neither could be considered to be highly critical or sensitive assignments. Yet in spite of the very critical and heavy demands on our personnel as a result of the Viet Nam situation, the officer in Brazil was allowed to complete his full two year tour and the one in Chile remains there at the time of this writing, some six months beyond the expiration of his estimated two year tour. So it may be concluded that while the threat does exist, it is not very likely to be effected except in such a dire case that the nation concerned, if in the least reasonable, would almost certainly not object to but rather approve the move.

There may be however, another real objection to which, in some cases, there may simply be no solution and that is a foreign military presence in a highly sensitive nationalistic country. Certainly we would arrive bearing no arms unless requested to do so and we could, as we have several times in the past, wear only civilian attire while in country. These restrictions along with previous factual press coverage of the situation will relieve the objections in almost all cases and with the exception of the rock throwing, library burning elements in almost all countries will satisfy the questions of the populace. But there will arise situations where a U. S. military presence under any restrictions or conditions will simply not be tolerable for internal or external political or other reasons. In such cases we have little

choice but to abandon our efforts in such areas until such time as our presence is at least tolerable.

It is apparent then that at least in most instances, the advantages of BUDOCKS' technical assistance to lesser developed countries far outweigh the objections and disadvantages for the Bureau, our Country and the recipient nation. If it appears that much attention has been given to this matter it is only because the basic question of BUDOCKS' technical assistance - yes or no? - must first be resolved once and for all in the minds of all concerned before such a program can even begin to show the results for which it possesses the potential. With an affirmative answer to this basic question as a basis, we can now proceed to investigate in Part II where our efforts may best be directed in this area and, subsequently in Part III, how such efforts may best be initialized and established.

PART II

MARKET ANALYSIS

A. Territorial Selection

There have been established by higher authority certain designated geographical areas which have been assigned to either BUDOCKS or the Corps of Engineers (CE), U. S. Army for responsibility for military construction outside the United States. These instructions from the Office of the Assistant Secretary of Defense for Installations and Logistics (OASD (I&L)) contained in what has come to be popularly called the "Divide the World Memo,"[6] also apply to the USAID construction programs in which the military construction agencies participate. The participation of these agencies in work for foreign governments is not specifically referred to in this memorandum, nor for that matter is work for other U. S. Governmental Agencies, again with the exception of USAID. However, the intent of the memorandum is very clearly stated in its opening words which read: "In order to assure that design and construction of military facilities are accomplished without duplication of manpower and other resources in areas outside the United States, the following additional geographic area assignments are made _ _ _ _." The concept of avoiding duplication of manpower and other resources in areas outside the U. S. is extended to include participation in the USAID construction program in a subsequent paragraph in the same memorandum which reads in part: "Pursuant to the DOD-AID" (Department of Defense-USAID) "agreement, under which the military construction agencies participate in the AID construction program, it is necessary that this office be kept informed of the location and scope of all projects undertaken to assure compatibility with the military construction assignments." It is considered reasonable to assume that the same duplication should also be avoided in work for other U. S. Governmental Agencies or

in assistance of foreign governments. Indeed, we may well consider that we have at least a moral obligation to do so. So let us therefore begin our study of the potential market for BUDOCKS' technical assistance by first relating these assigned areas of responsibility which are shown in Figure 1. In addition to those designations listed in Figure 1, this same memorandum also states: "The status of the Corps of Engineers, the Bureau of Yards and Docks, and the Air Force with respect to design and construction responsibilities remains unchanged in the United Kingdom, Spain and Panama."[6]

Speaking in terms of lesser developed nations, it will be noted that Central and South Africa and Latin America are the only major areas which remain to be designated. The reason for the omission of these highly significant areas is simple. There just has not been sufficient activity in these areas in the past by either BUDOCKS or the CE to justify the assignment of the areas to either one. There are no real military construction resources existent, therefore there are none subject to duplication.

It is the intention of the writer to confine this study to these two areas of Latin America and Central and South Africa, the latter of which we shall hereafter refer to simply as Africa, remembering however that it does not include that portion of North Africa assigned to the CE. The reasons for this selection are several. First of all, the fact that they are unassigned indicates the previous very low level of activity therein and therefore adds to their possible potential regarding the future utilization of BUDOCKS' technical assistance. Secondly, considering all factors, political, economic, social and military, these areas along with Southeast Asia are considered to be the most important

Areas of Responsibility For Military Construction

Outside The United States

Corps of Engineers, Department of The Army

1. Canada (excepting Newfoundland) and Greenland.
2. Europe, including The Azores.
3. North Africa from Morocco to Somali Republic.
4. The Middle East, and Southeast Asia to the western borders of Laos and Thailand.

Bureau of Yards and Docks, Department of The Navy

1. Newfoundland
2. Iceland
3. Indian Ocean - Australia - New Zealand, including the island complex north of Australia
4. Johnson and Midway Islands, and all other Pacific Ocean islands not previously covered under the Far Eastern Area construction assignments.
5. Bermuda and the Caribbean Area, including Puerto Rico and islands in the Caribbean Sea.
6. Down-range stations in the Atlantic and South Atlantic Ocean areas.

Figure 1

objects for all forms of U. S. assistance in the world today and should remain so for some years to come. Granted this is a rather broad statement but one with which few will disagree. With the degree of assistance that is being provided in Southeast Asia today, it is with no hesitancy that we can drop that area and concentrate on the others. Finally, it would be less than honest to fail to recognize the fact that since these areas are not currently assigned to either BUDOCKS or the CE, there will ensue efforts on the part of both organizations to obtain such assignments. It is obvious that there does exist a healthy spirit of competition between the Bureau and the CE and it is equally obvious that the first one to become established in either area has the best chance of being assigned responsibility for military construction therein, a goal certain to be sought by both. This is definitely not to say that areas that are currently assigned to BUDOCKS should be ignored in regard to their potential utilization of the Bureau's technical assistance. But it does tie in very neatly with our other reasons for their selection, that is, the apparent neglect of these areas in the past, their inherent importance and the current saturation of assistance in Southeast Asia. Let us then attempt to determine the potential market for technical assistance, first in Latin America and subsequently, in Africa.

B. Latin America

1. The Past and Present

In initiating our examination of Latin America (LA) as a potential market for the technical services of the Bureau of Yards and Docks and the Civil Engineer Corps, it would be well to begin by reviewing the nature and extent of such activities to date. Such a review will serve not only to bring us up to date on the status of the Bureau's efforts in the LA area but also to give us some idea of the nature and diversity of what may be included under the general category of technical assistance. We will confine our review to the period from 1960 to the present time. From the termination of World War II until 1960, such activities were, for all intents and purposes, non-existent in the Latin American area. While the degree of effort subsequent to that time has been far from great, it does relate to our investigation and is, therefore, worthy of a brief recapitulation.

The first real attempt to establish and organize a program for the activities of the Bureau and the Corps in the LA area came with the establishment in 1961 of a billet for a CEC Lieutenant Commander on the staff of the Commander U. S. Naval Forces, Southern Command (COMUSNAVSO) with headquarters in the Panama Canal Zone. The primary mission of this Command was and still remains the supervision of the Navy portion of the U. S. Military Assistance Program and the U. S. Naval Missions in Latin America. The primary duty of the CEC officer assigned to this staff was, therefore, to coordinate BUDOCKS' assistance to the U. S. Naval Missions and the Military Assistance Program. He was also charged, however, with the responsibility to endeavor to extend the services of the Bureau and

the Corps to U. S. and foreign governmental agencies that could utilize same, with particular attention to the USAID programs in that area. The reason for this particular emphasis was the success with which the Bureau was administering the USAID construction program in Southeast Asia to the advantage of itself, the USAID organization and the countries concerned. There was no apparent reason why the same could not be done in Latin America with equal chances of success. It was also considered to be the best avenue of approach to the potential utilization of the Bureau's and the Corps' services by the non-military public sectors of the LA economies.

The recognition of the need for such a billet and the potential for such services was brought about by four separate and unrelated occurrences. After the disasterous earthquake of 1960 in Chile, the Navy of that country requested the assistance of the U. S. Navy in rebuilding a seriously damaged pier at their shipyard at Talcuano across the bay from Concepcion. As a result of this request, a CEC Commander was sent to the site where he prepared the preliminary design for the repairs to the pier. Subsequently in 1962, a Seabee team of one CEC Lieutenant Commander and ten men arrived at the site where they remained in gradually diminishing numbers until 1965, supervising the repairs to the pier and training shipyard personnel in all aspects of the work, administrative and technical as well as in the construction trades involved. At approximately the same time in 1960, a request was received from the Ecuadorian Navy for assistance with the modernization of their Naval Academy at Salinas. This resulted in another Seabee team being sent to that site where they remained from 1961 through 1962 performing the same functions as the team in Chile. Again at approximately the same time, a third Seabee team was deployed

to Haiti to construct an emergency bridging facility to replace a critical bridge destroyed by a flash flood in that country. Shortly after these three requests, arrangements were made with USAID and the Government of the Dominican Republic for a third Seabee team to open and operate a school for the training of civilian equipment mechanics and power linemen, two trades in extremely short supply in the country. The team arrived in 1962 and the school functioned from the time of its opening in 1963 until it was closed by the forced withdrawal of the team, necessitated by the cessation of U. S. aid to that country after the military overthrow of the Bosch regime. It was subsequently reopened but finally closed once again by the civil strife in that country.

So as a result of these four unsolicited requests for technical assistance the COMUSNAVSO billet was established and efforts initiated to organize and expand such services in the LA area. The success of the four initial Seabee teams was outstanding in both the technical aspects of their work and in their acceptance by and relations with the people in the countries concerned. The readiness and willingness of the men to pitch in and work with their hands with the people was noted as, unfortunate as it may be, not being typical of U. S. assistance, with the notable exception of Peace Corps efforts. But even the latter were marked by a general lack of the experienced and mature personnel which comprised the Seabee teams.

However and in spite of this auspicious beginning, the program never really developed to the extent that might have been expected. The first officer assigned to the COMUSNAVSO billet of necessity spent most of his two year tour from 1961 to early 1963 making the contacts required to initiate the program in a formal manner, a formidable job for one man

in such a large area. Accomplishments during this period included arranging for the assignment of a CEC officer as civil engineering advisor to the Brazilian Navy; the preliminary design of an ARD mooring facility for the Colombian Navy at Cartagena; technical assistance with the efforts of the Seabee teams in Chile and Ecuador; the deployment of another Seabee team to Haiti to effect repairs to a municipal pier at Port au Prince; and preliminary planning for a proposed submarine base for the Peruvian Navy at Ancon. Efforts to expand beyond the military sector during this time were very limited and for the most part unsuccessful.

Subsequent to this period, prospects brightened somewhat and activities expanded considerably, partly as a result of previous contacts made but primarily through highly intensified efforts directed at the potential public sector of the L. A. market, chiefly through the USAID in - country organizations each of which was personally contacted and advised of the availability and scope of BUDOCKS' assistance. To be sure efforts continued in the military sector with the arrival in country of the CEC advisor to the Brazilian Navy and the establishment and fulfillment of a similar billet with the Chilean Navy. In addition, a study was made for the Uruguayan Navy of their drydocking facility at the port of Montevideo by the BUDOCKS' field office in San Juan which also executed the final design of the ARD mooring facility at Cartagena Colombia, the design of coastal watch towers for the Guatemalan Navy and the design of a small boat repair facility on Lake Maracaibo for the Venezuelan Navy. The Colombian Navy was also assisted in the planning of a military and commercial ship repair facility at Buenaventura. But of far greater importance and significance was the breakthrough into the non-military

public sector, primarily through the USAID in-country organizations. A CEC Commander filled the temporary need for a general engineer within the USAID organization at Recife, Brazil and a Junior Grade CEC Lieutenant served in the same capacity with USAID Costa Rica. The eruptions of Mount Irazu in the latter country with the resultant flooding of the City of Cartago led to the design of flood control structures for the Government of Costa Rica by the Bureau's San Juan office and the dispatch of another Seabee team with heavy earthmoving equipment to that city where they assisted with flood control measures and trained Costa Rican civilians in the operation and maintenance of the heavy construction equipment. In other areas, a port study was performed for the city of Montevideo, Uruguay; the Government of Ecuador was assisted in the planning of a complete new port facility including an entirely automated banana handling system, in the vicinity of Guayaquil; the Mexican Government was assisted in the study of a rather rapidly settling pier; an electrical power study was performed for several cities in Ecuador; and another for western Costa Rica. Indeed, in some cases requests for assistance exceeded the capabilities to respond as in the case of a request for a complete MCB from a U. S. Ambassador to meet an emergency situation in his assigned country. Unfortunately a battalion could not be spared because of the U. S. Navy's own requirements at that time. In another instance in mid 1965 and one which was to mark the end of an era, so to speak, of the Bureau's LA program and which coincided with the relief of the second officer in the COMUSNAVSO billet, a request for Seabee teams to supervise and train civilian personnel in community development and road building in another LA country was also regretfully rejected because of the fast rising demands of Viet Nam. The situation in the latter country and the

increased demands upon our personnel to cope with it have led to the current status of our LA program which, with the exception of the maintenance of the CEC billet on the COMUSNAVSO staff, is non-existent. This is extremely regretful not only from the standpoint of the countries concerned but also because we shall now never know for sure what might or might not have developed from these preliminary LA efforts. The program might have continued to grow as it had in its last two years or, once having filled these initial requests for assistance, it may have merely met a natural death from lack of demand. Indications can be found for both hypotheses. The next two years would have told the story one way or the other but now it will never be told, at least not for some time to come. But eventually and, hopefully soon, the course of events in this world will return us to relatively normal times and the question of BUDOCKS' technical assistance in the LA area will once more take on real meaning. In the interest of and in preparation for that time, we shall now proceed to attempt to make a theoretical analysis of the potential utilization of such services in lesser developed nations and begin by continuing in the LA area.

2. The Future

The writer proposes that the need for essential goods or services in a particular country can best be measured or determined by that country's official policy toward the importation of such goods or services as evidenced by the existence of any legal or official restrictions thereon. The emphasis is on essential goods and services to avoid the realm of import restrictions on non essential goods and services, the purpose of which may be solely to strengthen a nation's balance of payments and foreign trade position. But essential goods and services must be had and

restrictions on the import thereof may only be imposed to the extent that the country itself can fill the need or the gaps as the case may be. For example, a country completely lacking a basic necessity of life can ill afford a high import tariff or strict import restrictions on same, thereby rendering it more expensive or difficult for its people to obtain. But as it develops its own source of that particular good or its own capability to perform that particular service, import restrictions can be continually raised and toughened until they become practically import exclusive when the country has developed its own self sufficiency, to protect its national interests and strengthen its balance of payments position. The criticality of the latter problem in all nations and particularly in developing nations is well recognized. The writer further proposes that technical services in the field of civil engineering and its related disciplines do comprise a service that is essential to a nation and one of the key building blocks upon which all nations must rest the foundations of strong and healthy economies. This correlation becomes clearly evident when one considers the role of the engineer in the areas of urban and rural planning and development; low cost housing; development of natural resources; transportation; rural electrification; economic project analyses; and so on through the list of programs essential to developing nations.

From these two hypotheses it follows that an examination of the restrictions imposed upon the practice of engineering by foreign nationals in a particular country may well reveal a very good indication of the extent to which such services are available in that country. Attempts or efforts to quantitatively measure such restrictions have been most unrewarding and fruitless. However, some interesting results have been

obtained in a qualitative analysis of these restrictions by the writer, results which, surprisingly enough, indicate a very good correlation of the facts between almost all countries within the two geographical areas under consideration. It must be recognized that the basic data is not precisely accurate nor is it even complete as admitted in the source, the "Engineers' Overseas Handbook."[7] It is, however, generally accurate as of January 1965 and, as will be seen, does present a good indication of the restrictions placed on foreign engineers in the countries concerned and, therefore, following our hypotheses, the availability of such services in those countries.

There are many factors which might be included under the general category of restrictions on the practice of engineering by foreigners or as indicative of the state of the art in a particular country. We shall confine ourselves however only to those factors that relate purely to engineering practice and shall exclude those others that relate to any and all foreign businesses or services. We shall, therefore, not consider such factors as requirements for local representatives, the extent of local participation required in contracts, restrictions on convertibility of currency or repatriation of fees, or corporate and other taxes, all of which apply to all businesses and services. What we will examine is whether a license issued by the country concerned is required to practice engineering in that country and the requirements to obtain such a license or to merely practice engineering in the country, as the case may be. These two factors are considered to present the key to the answer of our question of the in-country availability of engineering services. In addition we will also note the number of engineers available in each country, where and to the extent that such information is available, as

a point of general interest. This information is compiled and presented in Figure 2 for the Latin American area.

It should be noted from Figure 2 that of the twenty countries reporting, ten or exactly half of them require an examination in the local language before a foreigner is permitted to practice engineering, regardless of his previous education or experience. Of the remaining half, two require a diploma from a recognized university plus local citizenship or permanent residency; six require a diploma from a recognized university; and only two have no requirements for the practice of engineering. Or from another standpoint, fifteen require a local license; two do not require a local license but require an examination; one requires registration and a diploma; and, once again, two have no requirements at all. For the present, we shall merely note this data well but without further comment and proceed to take a look at the situation in the second geographical area of our investigation.

Engineering Practice Requirements

Latin America

Country	License Required	Requirements	Number of Registered Engineers
Argentina	Yes	Diploma and series of exams	N.A.
Bolivia	Yes[1]	Diploma or exam, and $120.	200
Brazil	Yes[2]	Exam[3] and permanent visa	N.A.
Chile	Yes	Diploma and exam	3500[4]
Colombia	Yes[5]	Diploma and summary of qualifications	4393
Costa Rica	Yes	Diploma and exam	304
Dominican Republic	Yes[6]	See note 12	700
Ecuador	Yes	Diploma and exam	N.A.
El Salvador	Yes[8]	Diploma, Thesis and oral exam[9]	228
Guatemala	No[10]	Diploma and exam	400
Haiti	Yes	Diploma	N.A.
Honduras	No	None	N.A.
Mexico	Yes	Diploma, and Mexican Nationality or permanent resident[11]	10,464

Figure 2

Engineering Practice Requirements

Latin America

Country	License Required	Requirements	Number of Registered Engineers
Nicaragua	No	Registration and diploma	136
Panama	Yes	See note 7	400
Paraguay	Yes[13]	Registration, Transcript and Permit	161
Peru	Yes	Diploma and experience	N.A.
Surinam	No	None	N.A.
Uruguay	No[14]	Exam for Degree from University of Uruguay	1000
Venezuela	Yes[15]	Exam and reciprocal treatment of Venezuelan Engineers	4000

NOTES

General - All exams are technical exams given in the national language. Diplomas are in almost all cases specifically required to be from recognized universities.
N.A. indicates information not available or unknown.

1 unless under contract by universities, Government agencies or private organizations. Exception applies only for duration of contract and must be registered in a special register.

2 but may be employed by Brazilian firm without having a license.

3 including questions on Brazilian history, geography, the Portuguese language and technical matters related to engineering.

4 60 of whom are foreigners.

Figure 2

5 unless represented by or affiliated with Colombian engineering firms, or employed by foreign government agencies or locally established foreign companies.

6 unless employed by a foreign company under contract to the Dominican Government but all work for the Ministry of Public Works must be signed by a licensed Dominican engineer.

7 diploma from the University of Panama or an institution recognized by the university; registration with the Minister of Education; Panamanian citizenship or permanent residence; a good conduct certificate; reciprocity to Panamanian engineers by country of origin. Foreign engineers may be employed if Panamanian engineers with the required capability are not available. All plans must be signed by licensed engineers. If a contract is for more than a year, a Panamanian engineer must be hired and trained to replace the foreign engineer at the end of the year.

8 unless working on a program financed by foreign capital.

9 reportedly difficult even for Salvadorans graduated from foreign universities to obtain licenses.

10 but exam and diploma still required to practice.

11 a foreign engineer cannot practice at all except as a temporary resident invited to do a specific job.

12 degree in engineering which must be revalidated in Spanish if from a foreign university; certificate of good conduct from the Attorney General; current receipts from the Internal Revenue Department showing payment of all taxes due; application for license to Ministry of Public Works, accompanied by documents which prove compliance with all formalities required by previous laws; admission to country as permanent resident aliens; and permanent personal identification documents.

13 unless employed by a firm operating under contract with the Paraguayan Government.

14 but must have degree from the University of Uruguay.

15 except if under contract for a specified time, subject to the approval of the Venezuelan College of Engineers.

Figure 2

C. Africa

To date there has been no real effort to initiate or organize a BUDOCKS or CEC program on the African continent. Indeed, with the exception of isolated and unrelated instances in Liberia, Chad and the Central African Republic, that vast geographical area remains for all intents and purposes deprived of any such technical assistance by the U. S. Navy's construction agency. There being no real past history to relate, we shall proceed immediately to make the same analysis to the requirements for the practice of engineering in Central and South Africa as we have just done for Latin America. This analysis, presented in Figure 3, is derived from the same source, the "Engineers' Overseas Handbook."[7]

From Figure 3 we see that of the twenty-six countries reporting, none require any sort of an examination before a foreigner is permitted to practice engineering. Indeed, only four of the twenty-six even require a diploma to practice; three require only the submission of qualifications; nine solely require registration or compliance with immigration or employment requirements; and ten have no requirements at all. Or again from another standpoint, only five countries require a local license one of which has no technical requirements to obtain same; one does not require a local license but does require a diploma to practice; two others require only the submission of qualifications; and the remaining eighteen have no technical requirements at all.

Let us now proceed to compare these results from Africa with those previously obtained for Latin America.

Engineering Practice Requirements

Central and South Africa

Country	License Required	Requirements	Number of Registered Engineers
Burundi	No	Entry Visa and Work Permit	15
Central African Republic	No	Diploma	N.A.
Chad	No	None	N.A.
Republic of Congo (Brazzaville)	No	None	N.A.
Republic of Congo (Leopoldville)	No	None	N.A.
Dahomey	Yes[1]	Diploma	N.A.
Gabon	No	Qualified in Home Country	10
Ghana	No	Permission to work and employ foreigners	N.A.
Guinea	Yes	Diploma or qualifications, and personal history	N.A.
Ivory Coast	No	None	150[2]
Kenya	No[3]	None	270[4]
Liberia	Yes	Annual Fee and Permit to Work	6
Malagasy Republic	No	None	N.A.
Malawi	No	None	36
Mali	No	None	N.A.
Mozambique	Yes	Diploma and Registration	N.A.
Republic of Niger	No	Registration	4 Firms[5]

Figure 3

Engineering Practice Requirements

Central and South Africa

Country	License Required	Requirements	Number of Registered Engineers
Nigeria	No	See Note 6	100 Firms[6]
Rwanda	No	Registration	N.A.
Senegal	No	Qualifications	N.A.
Sierra Leone	No	Work Permit	N.A.
Republic of South Africa	No	None	N.A.
Southern Rhodesia	No	Approval by immigration selection board	36
Togo	Yes	Diploma and Registration	30[8]
United Republic of Tanzania	No	Immigration Requirements	6
Upper Volta	No	None	N.A.

NOTES

General - N.A. indicates information not available or unknown.

1 unless employed by the United Nations or a foreign government on an economic assistance program.

2 120 Europeans and 30 Africans.

3 except for sanitary engineers under the Water Ordinance of 1951.

4 19 registered under the Water Ordinance.

5 all European.

6 but must satisfy the requirements of the Nigerian Immigration Act and comply with the provision of the Companies Act if propose to set up practice as a corporation.

7 16 of which are of sufficient stature to be classified as consulting engineering firms.

8 90% of whom are employed by the Government.

Figure 3

D. Comparative Analysis

A comparison of Figures 2 and 3 reveals a marked dissimilarity between Latin America and Africa in the area of restrictions placed on the practice of engineering by foreign nationals. Of particular significance is the fact that 50% of the Latin American countries require an examination in the local language regardless of previous education or experience, while none of the African countries have any examination requirements. From another standpoint, only 10% of the Latin American countries have no technical requirements whatever for engineering practice while 73% of the African countries have no such technical requirements. The latter fact in particular indicates a definite need for engineering services in the African area. With these services in such short supply, 73% of the countries can afford no technical requirements whatever preliminary to the practice of engineering. The situation is so serious that the door is literally open in those countries for anyone who may have the barest knowledge of a technical discipline to practice engineering.

Going back to Latin America, we may well ask if we may therefore logically conclude from the information presented in Figure 2, that there is no real need for technical assistance in this geographical area. This question is a bit more difficult to answer when compared to the obvious need in Africa. The information in Figure 2 certainly indicates a relatively strong degree of protectionism with regard to engineering services in most of the countries of the L. A. area. However, we are faced with statements like the following which would tend to belie any resultant supposition that there is, therefore, no real need for technical

assistance. In editorializing favorably on the operations of The Inter-American Development Bank, The Chase Manhattan Bank of New York states "However, through no fault of its own, its operations appear to be hampered by a scarcity of sound, well formulated projects. . . . The availability of funds is not the only factor holding back loans from the IDB, as well as from the World Bank, the Export-Import Bank and the Agency for International Development. Most observers agree that available funds are not being completely utilized because of a lack of sound projects . . . . It is ironic, and most unfortunate, that countries so in need of capital to improve their development should lack the projects to put the capital to effective use. But this is part of the reason for their underdevelopment. . . . . What is needed is more and better education, technical training, and a host of other improvements . . . ."[8] Statements such as these and others in a similar vein might be construed to contradict our basic hypothesis relative to the need for technical assistance being a function of the restrictions placed on engineering practice or, at the very least, to question its validity. However, it has been the writer's experience in Latin America that the state of the art in private practice is not at all comparable to and is actually far superior to the state of the art in governmental agencies. There are two basic reasons for this dichotomy. First, pay scales for engineers in governmental agencies are far below those obtainable in private practice. Such a disparity is not an unusual situation and is in fact one that is prevalent throughout the world. However, in Latin America and other lesser developed areas, the spread between the two is far greater and other factors which, in more developed countries, tend to compensate for the disparity in wages are not in evidence. Instead of the relative security of civil servant

status, such positions are prone to be far more susceptible to political manipulation. Other compensating factors such as grievance procedures, retirement benefits and seniority are also in almost all cases non-existent, thereby completely shattering any concept of security which is usually the mainstay of civil service. Secondly, while a lack of inherent talent in an organization might be overcome by utilizing outside services, the budgets of these governmental agencies do not permit this alternative. So while the engineering talent may be available in-country, it is generally not available to the governmental agencies that need it.

But for the purposes of this paper, a discussion of the exact degree of need in Latin America is strictly academic. It is obvious from a comparison of Figures 2 and 3 that whatever the exact degree of need may be for technical assistance in the L. A. area, the need in Africa is far greater and much more urgent. Further, through the maintenance of the CEC billet on the COMUSNAVSO staff, the L. A. program can be resumed as soon as circumstances permit. But there exists at the present time no such mechanism to effect such a program on the unassigned portion of the vast and needy African continent. We shall therefore devote the remainder of this paper to developing a method of approach for an organized program of Bureau of Yards and Docks and Civil Engineer Corps technical assistance to Africa where, from the information previously presented, we can anticipate far more striking and productive results than those obtained from our previous but unfortunately rather short-lived efforts in Latin America. But in our travels eastward, let us by no means forget that we still have an important and yet to be fully played role in the continued development of our important neighbors to the south.

PART III

APPROACH TO AFRICA

A. Lessons From The Past

Before delving into a method of approach for initiating a program of Bureau of Yards and Docks and Civil Engineer Corps technical assistance in Africa, it would be well to review for a moment the two basic lessons learned from experiences in this field in the Latin American area, for the application of these lessons will have a direct bearing on the method of approach to be applied in Africa.

First of all, because the Bureau and the Corps are Navy organizations, there will be a very strong tendency on the part of both U. S. and foreign officials to view these organizations from the standpoint of having an inherent expertise in waterfront facilities - and only in waterfront facilities. Even citing past accomplishments in other engineering fields at great length will not, in most cases, change these preconceived opinions to any significant extent. But as a matter of fact, such notions are not at all unreasonable in this era of specialization which generates experts not only in particular engineering and scientific disciplines but in the numerous and sometimes minute subdivisions of those disciplines. This same specialization is prevalent in numerous U. S. Governmental Agencies, any one of which might provide technical assistance to a lesser developed nation in a particular field. The Bureau of Public Roads in highway and road construction, the Federal Aviation Agency in airfield construction, the U. S. Army Corps of Engineers in flood control, and the Tennessee Valley Authority in electrical power generation and distribution are but a few examples. Nor is the list limited to federal agencies. Indeed, an organization such as the Port of New York Authority would compare quite favorably to the Bureau and the Corps in experience and ability in the field of waterfront

construction and development. The fact that the Bureau has many accomplishments in the areas of the examples cited above and others does not change the fact that it does not specialize in those fields as do certain other agencies. However, lest we become overwhelmed with the concept of specialization, we must remember that there still exists a very definite need for the general practitioner in the field of engineering as there does in the field of medicine. The only point is that it should not come as a complete surprise to have the Bureau's services rejected on a particular project in favor of another agency considered to be more expert in the field. In view of all the above, it would appear that rather than fight the tide of specialization it might be far better to go along with it and approach an African program through the medium of expertise in waterfront facilities. This approach might also be used as a stepping stone to the status of general practitioner but this concept is a bit premature at this point and will be left for now for subsequent further development in the final section on method of approach.

The second lesson to be learned from past experiences in Latin America is that approaching the non-military public sector of the African economies through the USAID organizations in Washington or in-country does not necessarily guarantee success. Far from it. In many cases and for very good reasons this approach only compounds the problems rather than simplifying them. In some cases an in-country USAID organization may be attempting to build up its own engineering capability and the import of Bureau personnel could spell disaster for such plans. The same might be true of the supporting USAID engineering organization for that area in Washington. Further, U. S. Governmental personnel overseas

are equally if not more sensitive to the presence of U. S. military personnel in their countries as the local populace, particularly any large scale presence. Hence the rather frequently encountered requirement for military personnel to wear civilian attire when on assignment in foreign countries and the general reluctance encountered at the proposal of the assignment of any significant numbers of such personnel. This should by no means be construed as an anti-military sentiment on the part of other U. S. personnel assigned overseas but rather a well founded and rightfully cautious approach to the question of a U. S. military presence in a foreign country. But all this is certainly not to say that the USAID organizations are to be avoided. On the contrary, they can be extremely helpful in pointing out areas of possible assistance and in establishing required contacts. They can also be expected to utilize the Bureau's and the Corps' technical services on particular projects. But unless a military situation should develop in Africa similar to the one which has unfortunately evolved in Southeast Asia, the USAID organization, in general, should not be relied upon to aid and abet any large scale build-up of Navy construction personnel in Africa unless and only unless other general conditions make it extremely difficult to recruit required personnel for their own organizations.

So, in proceeding to Africa, the Bureau should:

1) Attempt to capitalize on its inherent expertise in the planning, design and construction of waterfront facilities.

2) Seek other means in addition to the USAID organization to establish and maintain an African program.

The how of the first and the what of the second will be developed in

the final section of this paper relating to the method of approach. But let us first turn to the problem of initiating the program and, in particular, the question of where such efforts might first be directed.

B. Initiating the Program

1. The Problem - Where To Start?

The first requirement for the organization and initiation of a program of Bureau of Yards and Docks and Civil Engineer Corps technical assistance to African nations is for the establishment of a CEC billet somewhere in the area which can be utilized to effect such a program. The existence of the COMUSNAVSO staff in the Panama Canal Zone rendered the selection of the physical location of such a billet for the LA area a relatively simple determination, though consideration was also given to the establishment of that billet within the organizational structures of both the Commander U. S. Naval Forces South Atlantic (COMSOLANT) located at Trinidad and the Commandant Tenth Naval District (COMTEN) with headquarters at San Juan, Puerto Rico. But the Canal Zone presented the natural selection because of its location between Central and South America and the frequency of scheduled flights both commercial and, more important, military from that location north and south into all areas of Latin America. The ready accessibility of space available military air transportation supplemented by numerous commercial flights was a very important factor in the location of a billet that was to require extensive and frequent travel into all areas of Latin America on a very limited travel budget. The presence of the U. S. Naval Missions in all the larger LA countries and the existence of the U. S. Navy Military Assistance Program to those countries also provided numerous requirements and opportunities for travel chargeable to those functions during which time could be made available to devote to efforts to penetrate the non-military public sectors of the LA economies. If this appears to be placing too much emphasis on what might be considered to be the

relatively insignificant item of travel expenses, it is only because it was a very real problem. A certain amount of such costs can be absorbed by the Bureau's overhead charges for work subsequently accomplished but when such travels produce little or, in many instances, no such subsequent requests for assistance then the expenditure of funds for such purposes becomes a highly questionable item from a strictly economic viewpoint. The Bureau is more than ready to authorize such expenditures within reasonable limits in anticipation of recovering them to some extent at least in future overhead charges. But when results are not forthcoming to any appreciable extent and it is a fact that such efforts can be and often are extremely non-productive, then futher expenditures in pursuit of same become highly suspect to say the least.

Returning now to Africa where the same problems can be anticipated, we are immediately struck with the fact that there does not exist any natural location for the establishment of the billet we have in mind. The nearest existing U. S. Navy staffs suitable for such a billet are in the Azores, Madrid and Naples. Scheduled military air transportation from those locations to Africa is non-existent and commercial air is not really very much better. Further, remembering that the Army Corps of Engineers has already been assigned responsibility for North Africa, the locations mentioned are considerably far removed from the market. Finally, U. S. Naval Missions and U. S. Navy Military Assistance are for all intents and purposes, if not actually, also non-existent in the market area. So, lacking a natural location for the establishment of our billet, we must create an artificial one and review and perhaps revise our criteria for its selection.

Finding ourselves completely lacking both in scheduled military air

transportation in the area and in an excuse if you will for travel in connection with Naval Mission or MAP matters, the following two optimum criteria naturally follow in determining where to establish our billet:

1) The billet should be physically located in a country which possesses the largest potential market for the Bureau's and the Corps' technical services.

2) The country should be centrally located with respect to the remainder of the market area to facilitate and minimize the cost of travel thereto.

These two criteria are not necessarily compatible. In weighing the relative merits of various locations, the emphasis should be placed on the former because of the importance of initially establishing a successful program in at least one country from which efforts can subsequently be expanded and also because the costs of travel throughout the area will not vary to any significant degree from one location to another, barring extremes. Finally, an exact determination of other promising countries as the program develops is for the present indeterminate and beyond the scope of this paper, the purpose of which is to deal only with the initialization of the program.

Additional problems in connection with the lack of an existing organizational structure within which to establish the billet will be taken up in the final section on the method of approach. But let us now examine in some detail the logic behind our selection of the starting point for the organization and initiation of our program - the Federal Republic of Nigeria (FRN).

2. The Federal Republic of Nigeria

The selection of a particular country in which to concentrate initial efforts in the establishment of an African technical assistance program becomes a rather difficult task in view of the numerous countries to be considered in such a selection and the equally numerous arguments which can be generated both for and against the proposed selection of each one. However, the designation of the Federal Republic of Nigeria as the logical take-off point for the program was far from arbitrary. The FRN is Africa's most populous state. It is, in fact, rated as one of the few African countries with an internal market large enough to support modern industrial plants. Its currency, the Nigerian pound, equal to $2.80 U. S., has had a history of stability. Nigeria is considered to be rich in that resource which has probably more than any other single factor been the key to internal wealth in the economic history of nations - oil, as witness Kuwait and others. Indeed, in the case of Nigeria, it is estimated that by 1970 earnings in this industry could be in the neighborhood of 250 million Nigerian pounds annually ($700 million U. S.) or more than all Nigeria's exports earned in 1963 or 1964.

All of the above relates to the country's ability to attract external investment and to develop internal capital and hence gives some indication of the financing available now and in the future for internal development in the form of capital projects. But there exists another very important aspect to be considered in such considerations, that is, political stability and the writer would be remiss in omitting a discussion of that factor, particularly in view of the circumstances as presented in the following paragraphs.

The writer must confess to having selected the Federal Republic of

Nigeria prior to the military coup which transpired in that country in January 1966 and to having given considerable weight to that country's previous history of political stability in making the selection. Nigeria had, in fact, for the well over five years which had lapsed since the time of its independence from Great Britain on 1 October 1960, exhibited a capacity for successfully overcoming successive political crises, by no means a minor accomplishment when viewed in the light of contemporary African history. Equally important, the FRN, significantly almost alone among the African states, had preserved during that time a free press, an independent judiciary and a free party system. Though the last had not been free of charges of alleged local intimidation and malpractices and certainly without attempting to condone same, this is hardly a unique internal condition as witness the sometimes harrowing reports of last year's elections in the Philippines and similar cases in recent years throughout the world.

The record of political stability in Nigeria was then, to say the least, rather impressive. The writer therefore, was no less surprised than the rest of the world at the course of events which unfolded during the military coup of January 1966, to which the general reaction of the world is perhaps best summed up by "Time" magazine's statement that "It was all the more shocking because Nigeria in its five years of independence has been held up as a showcase of stable African democracy."[9] The writer's immediate reaction to the coup was one of despair at having apparently lost what had up to that time appeared to be the obvious and logical starting point for the Bureau's African program. But time and the efforts of the military regime to effect economic, social and political stability have all tempered that initial reaction. Further

and without rationalizing or attempting to justify same, military coups are to the writer a very real though cold and hard fact of political life in lesser developed nations, after having spent well over two years working throughout the LA area. The writer was in fact present at a military reception in the Dominican Republic during which he shook the hand of the President of the Republic, Juan Bosch, on the very night and only hours before he was subsequently forcibly removed from office by his leading military officers. This too in a country which had come to be known as a "showcase" of American democracy. And the same story has been repeated numerous times and in most recent years in Colombia, Peru, Ecuador, Brazil and, at the very time of this writing at the end of June 1966, in Argentina, to cite but a very few examples in the "better" developed LA area.

So again, in retrospect and without being in any way complacent about such matters, the Nigerian coup is not considered to be sufficient grounds on which to change the original selection, though it will remain a rather large mark against the previously enviable record of political stability. But there are factors other than those previously mentioned which make the selection of that country an extremely difficult one to reject.

The USAID in reporting on U. S. technical and capital assistance in support of economic development in Nigeria states that "The United States is impressed with the extent to which Nigeria is committing its own resources to well conceived development plans, its ability to absorb foreign assistance and the sense of social justice that pervades its planning."[10] The first two items relate directly to the size of the potential market for the Brueau's technical services in the Federal

Republic of Nigeria and will be elaborated upon in succeeding paragraphs. The last statement relates to our own moral obligation as a country, especially in view of this sense of social justice which our country perceives as pervading in the FRN's own planning, to render every possible assistance in the successful development of that country and requires no further elaboration.

The Federal Republic of Nigeria has established a sound National Development Plan utilizing both domestic and foreign capital. Expenditures of the Nigerian Government in the implementation of the public sector of this plan during its first two years of implementation have totaled some 150 million Nigerian pounds ($420 million U. S.) and it is anticipated that this rate of expenditure will accelerate with time. For example, the Central Bank of Nigeria issued in February of 1965 the Federal Republic of Nigeria Second Development Loan in the amount of $42 million (this and all remaining figures in $U. S.). This is in addition to previous loan issues of over $39 million. With regard to external financing, the World Bank has committed over $160 million in economic development loans and USAID has authorized $225 million (excluding the cost of some 600 Peace Corps Volunteers) of which some $118 million remains to be committed. Areas of expenditures for capital projects within this framework are various and extensive and include such items as roads, port development, electrical generating and distribution facilities, educational facilities, telecommunications, dams, railway facilities, water supply and distribution, sewerage and drainage and civil aviation. The point is that the financing for such capital projects apparently is and will continue to be available in Nigeria.

All of the above certainly contributes to the potential market within

the FRN for the utilization of the Bureau's technical services. But it is in fact meaningless unless we can prove more conclusively and succintly than the evidence presented in Table 3 and the conclusions generated therefrom might indicate, that there is a definite and real need for such assistance within the Nigerian Government. In this regard, it is interesting to note that the following government agencies in the FRN find it either necessary or desirable to utilize the services of consulting engineers:

Ministry of Defense

Ministry of Transport and Aviation

Ministry of Works and Surveys

Ministry of Education

Ministry of Mines and Power

Ministry of Communications

Ministry of Economic Development

Electricity Corporation of Nigeria

Nigerian Ports Authority

Nigerian Airways

Regional Development Corporations

Regional Housing Corporations

Regional Economic Planning

While this might appear to be rather strong evidence of a real need for technical assistance within the Nigerian Government, the writer must confess to having saved for last the most important indication of the potential market for the Bureau's technical services and the key to the approach to Nigeria. On 31 March of 1965, in presenting his 1965 budget

speech, the Federal Minister of Finance stated that "The main problems which are encountered in attracting external finance - the tying of aid to off-shore costs and to specific projects, the lack of skilled personnel to undertake the feasibility studies and project appraisals required by foreign lenders, and the very detailed project documentation which some donor countries insist upon - still persist."[11] The last two problems mentioned are the most significant indication of the potential market and the key to the approach to Nigeria, which should be technical assistance tied in with and as an integral part of a technical training program. So let us now proceed to develop a method of approach for such a program in the Federal Republic of Nigeria.

C. Method of Approach

In developing our method of approach for the organization and initiation of an African technical assistance program within the Federal Republic of Nigeria, it is probably best to start by reviewing the two lessons learned in Latin America in attempting to effect such a program and applying them to the African situation.

We will recall that the first conclusion reached from previous experiences in the LA area was that the Bureau should attempt to capitalize on its inherent expertise in the planning, design and construction of waterfront facilities. The Federal Republic of Nigeria would appear to present excellent opportunities to do exactly that. Nigerian international commerce is expanding rapidly and existing port facilities are grossly inadequate. For example, tonnage at Apapa Quay alone has expanded from 766,000 tons deadweight during the year ending 31 March 1955 to 1,700,000 tons deadweight during the year ending 31 March 1965. The latter figure is 50% higher than the theoretical maximum capacity with the facilities available. In this particular case, this situation will be eased somewhat by new facilities that are under construction at the present time, but the problem will remain far from solved and this situation is indicative of the general conditions at other port facilities. So there is, and will be for some time to come, considerable work to be done in this area of port development which is vital to the continued economic development of the country.

The second conclusion reached from previous experiences in Latin America was that the Bureau should seek other means in addition to the USAID organization to establish and maintain an African program.

This can be rather neatly tied in with the first conclusion by making the initial approaches to the Nigerian Ports Authority. The implementation of this part of the plan should present no real problem for the Bureau has in the past and is at the present time performing work directly for foreign governments. The initial in-country contacts should be made through the U. S. Embassy in Lagos and details of any arrangements with the Nigerian Government will have to be coordinated with and approved by that Embassy. The previously quoted Minister of Finance's statement relative to the lack of skilled technical personnel and the requirements for detailed project documentation may be cited as the impetus and Embassy personnel can be counted upon to be at least aware of the problem and certainly desirous of seeing it solved. Further, and quite important, the Bureau will not be competing with any other U. S. Government organization whose representatives at the Embassy might oppose these initial efforts. USAID personnel can not sit down and prepare projects and feasibility studies for the Nigerians to submit to their own Agency for their own approval, and even the U. S. Army Attache would have a very difficult time questioning whether waterfront construction falls within the Navy's purview. The USAID and other Embassy personnel can be very useful in determining the needs of and initializing overtures to the Nigerian Ports Authority. From there and as far as initial contacts are concerned, the approach will have to be played pretty much by ear, but consideration should certainly be given to contacting other of the Nigerian governmental agencies depending on just how strong a waterfront image of the Bureau is encountered. In this regard, the Minister of Finance could probably be of very valuable assistance in indicating those federal and regional agencies that are particularly

weak in technical competence. The goal is to obtain a specific request for the Bureau's services from some sector of the Nigerian Government and, since any such request will have to be submitted through the U. S. Embassy, to prepare a favorable climate therein for its receipt.

The plan to be presented to the Nigerian Government is similar to the one that was attempted, without any significant success, in Latin America through the USAID organization, but this time working directly with the Nigerian Government and concentrating on the Bureau's expertise in waterfront construction, with special emphasis on the training aspects of the program. The plan breaks down into three general phases which may be summarized as follows:

First, the immediate assignment of a CEC Lieutenant Commander or Commander to the Nigerian Ports Authority. During this phase the officer assigned will develop manning requirements for the technical services to be provided and for the implementation of the training program, both of which will be tailored to meet the particular needs and requirements encountered. Assistance in the form of on-site visits by specialized BUDOCKS personnel will also be required during this phase of determination of requirements.

Secondly, upon completion of the first phase and the approval by the Nigerian Government of a proposed organizational staffing based on requirements, the further implementation of the plan with the initiation of recruitment and actual staffing of the organization. In actuality, there will probably not be a definite line between this and the first phase as the proposed staffing will most likely be submitted piecemeal to the Nigerian Government in order to initiate civilian recruitment

action on at least some billets at the earliest possible date, to allow for a gradual and orderly buildup of the organization. This phase is visualized as including the initialization of the training program on a graduated basis in consonance with the development of the Bureau's organization and continuing through to the attainment and maintenance of the optimum organizational level, again, as dictated by requirements.

As the training program progresses and ultimately terminates, the third and final phase of the plan, the gradual demobilization of U. S. personnel, will be implemented. The intermediate goal in this phase could be either the complete withdrawal of U. S. personnel or the reduction of same to a skeletal staff to function on a consulting basis or the maintenance of a complete office to provide additional technical services, the choice of course to be determined by the needs and desires of the Nigerian Government. The ultimate goal, however, will be the eventual complete withdrawal of all U. S. personnel, leaving behind a competent and self-sufficient organization.

The training aspect of the plan, with which the Bureau has had considerable experience, and the ultimate goal of working out of a job should minimize if not completely eliminate any complaints of competition from private U. S. consulting firms, who, generally speaking, have little experience or interest in the former and less in the latter.

The above plan is based on providing these services to the Nigerian Ports Authority. However, should it prove possible to overcome the Bureau's waterfront image either at the outset or at some subsequent point in time, it would be far more desirable to establish the organization as an independent office providing technical services for and accepting

trainees from several Nigerian governmental agencies. From the standpoint of the Bureau's interests, the possibility of such an office becoming the center or base for similar operations in other of the African states is certainly worth more than a passing thought as is the effect the existence of such an office might have on any future determination by OASD (I&L) relative to the eventual assignment of the African area to either BUDOCKS or the Army Corps of Engineers.

The matter of reimbursement for services should present no real problem in view of the critical need for trained technical personnel and the financing which is apparently available. With regard to the latter, there is also a very good possibility of USAID providing at least some financial assistance, particularly in view of the training aspects of the plan. There is a requirement that business concerns can repatriate funds only with the approval of the Nigerian Government exchange control officials. Permission must also be obtained to export funds for the settlement of overseas obligations, which would most likely include BUDOCKS overhead. However, it is reported that legitimate requests to repatriate funds are generally granted without restrictions and, particularly in view of the Bureau's function, there is little likelihood of any problems in this area.

The initial efforts to organize and establish such a program can be counted upon to consume considerable time and effort. To do so by means of only visits from Washington is considered to be highly impractical. There is a definite requirement for a man on the spot to answer inquiries, provide additional or clarifying information, to personally follow-up on the progress of the numerous items involved in establishing the program, and, most important, to become thoroughly familiar with the political, economic, social and military climate in the area and sensitive

to any changes thereto as they mayevolve and develop. As we have previously noted, there is no existing practical organizational mechanism through which such a billet might be established and which might be expected to assist with the initial costs of travel and per diem involved in organizing the program. The Bureau must, therefore, be prepared to bear these initial expenses on the gamble, if you will, that they will subsequently be recouped in overhead charges on future work generated as a result of these efforts. Further, a new concept must be developed or, as will be seen, an existing one adapted to provide the required billet. The writer proposes the establishment within the structure of the U. S. Embassy in Lagos of a billet, the occupant of which would be directly responsible for the supervision of all efforts of the Bureau and the Corps in the African area. Such a billet would be similar to the ones established by the U. S. Marine Corps for the supervision of U. S. Embassy Marine guards in the various geographical areas of the world and should be filled by a highly competent CEC Lieutenant Commander or Commander, depending upon the individual selectee's ability and experience.

Before proceeding further into the details of the billet, it is well worth noting at this time that the obvious disadvantage of the Bureau having to bear the complete costs of this billet is more than offset by the fact that the individual officer assigned will have no other demands upon his time than the efforts involved in effecting the program which can, therefore, receive his full and undivided attention. From the standpoint of the writer's personal experience in Latin America, this is a very important factor as the LA efforts in this field were all too often evershadowed by and, of necessity, placed secondary to the demands of the U. S. Naval Missions and the U. S. Military Assistance Program. In cases of any conflicts in time or efforts between these two functions

and the embryo LA program of the Bureau, the latter wound up in last place which, though these precedences were absolutely correct, certainly did not help to get the program off the ground. Further, the introduction of another command structure with different aims and objectives is almost certain to inhibit the Bureau's program and produce command personnel whose reaction to same may vary from strong support through mere tolerance to outright opposition, therby compounding considerably the already numerous and varied problems inherent in organizing the program. So while the independence of the billet must be paid for, it is considered well worth the price.

Returning once again to the particular billet, the officer selected must be carefully and thoroughly briefed by appropriate Bureau and Defense and State Department personnel both in Washington and in-country on the oft-repeated political, social, economic and military status of the area. The officer involved should be given a free hand with regard to his efforts and, most important, his authority to commit the Bureau, within reason of course. In this regard and again from the writer's own personal experience, there is probably no one single item of equal importance to the success of efforts of this nature as being able to make a commitment right on the spot. Any delays, however short, in waiting for Bureau approval of such a commitment result in a waning of whatever initial enthusiasm may be generated on the part of the other party and, indeed, the handling of negotiations through Washington, resulting in further contact through the media of correspondence, complicates matters to a highly disproportionate and incredible extent and, in most cases, almost certainly dooms such efforts to failure. While these are strong words, the importance of this aspect cannot be overemphasized. Finally and

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once again, the selection of the individual officer to fill this first billet is of the utmost importance. It often happens that foreign governmental personnel are more impressed with the individual they encounter than with anything he may say about the capabilities of the Bureau and the Corps. This selection must, therefore, be made with the utmost care and precision.

Individual personnel selection, both civilian and military, for the initial assignment and all subsequent ones which may develop should not present much of a problem. As can be seen from Figure 3, there are no requirements at the present time for the registration or licensing of engineers to practice in the Federal Republic of Nigeria nor are foreign engineers required to be licensed by their home country. Local participation, that is, the hiring of Nigerian personnel, is not required by law though the training aspects of the Bureau's proposal would dictate the maximum feasible degree of participation by Nigerians. The metric system is the official one used in the FRN and all work would have to be done utilizing that system. However, this was also a requirement of the Spanish Bases Construction Program and presented no real problem. Finally and of considerable importance from the standpoint of individual personnel selection, the official and commercial language of the country is English.

There are, however, additional potential problem areas that will require attention. All individuals are subject to an income tax by the Federal Republic of Nigeria. This tax runs on a graduated scale from 5% for the first $1120. of income to 75% on any excess over $28,000. The Bureau will no doubt wish to make arrangements to have its personnel exempted from this tax. Considering the nature of the efforts involved, the chances of obtaining such an exemption would appear to be favorable,

though it is readily admitted that this is pure conjecture on the part of the writer. There are, at least, no restrictions on the repatriation of personal funds. Finally, while there is no apparent discrimination practiced against U. S. consulting engineers, there does exist a tendency to favor British firms due to long association. However, this too is not considered to be a formidable obstacle especially in view of the fact that we are speaking of a U. S. Government organization rather than an individual U. S. firm.

There are no doubt other problems and problem areas which may arise particularly in the early stages of initiating such a program, which cannot be anticipated at this time. Then too, while the writer has attempted to cover at least all the major potential problem areas and some of the more significant minor ones, there may be others which have inadvertently been overlooked. But even considering a rather high probability of such eventualities, the prospects for the success of the program as outlined would appear to be most promising and certainly worthy of the relatively minor efforts involved in attempting to initiate it.

PART IV

CONCLUSION

In summary, we have seen in Part I after a rather thorough discussion that there does exist a definite role for the Bureau of Yards and Docks and the Civil Engineer Corps in the provision of technical assistance to lesser developed nations. Indeed there are real advantages to be gained from such a program by both the Bureau and the Corps and the countries involved and these advantages far outweigh the additional responsibilities, inconveniences and disadvantages inherent in the U. S. Navy's involvement in such a program.

In Part II we have developed the theoretical but logical proof of the existence of a definite need and high potential for the utilization of technical assistance in the various and several Latin American and African nations. We have also concluded that, though there still exists a definite need for such assistance in the Latin American area, the real target of opportunity if you will lies to the east in the emerging African states.

Finally, in Part III we have solved the problem of where to initiate such an African program by selecting as the starting point the Federal Republic of Nigeria. In addition we have also developed a definite program to be presented to that nation and have discussed the various ramifications and potential problem areas involved in organizing and initiating such a program in that country, finally concluding that the potential for the success of the program is indeed great.

All of the above has been developed with the knowledge that the facts of reality preclude the initiation of the African program and the resumption of the Latin American program until such time as the demands of Southeast Asia permit. But it has also been developed in the sincere hope that such a time lies waiting in the not too distant future.

Bibliography and References

1. "Organization Manual," NAVDOCKS P-313, Department of the Navy, Bureau of Yards and Docks.

2. "U. S. Navy Regulations," U. S. Government Printing Office, Washington 1948 (with changes thereto)

3. "Policy Reference Book," NAVDOCKS P-329, December 1965, Department of the Navy, Bureau of Yards and Docks.

4. "Webster's New International Dictionary," Second Edition, Unabridged.

5. "Mobile Construction Battalion Administration," NAVDOCKS P-315, November 1959 with changes thereto, Department of the Navy, Bureau of Yards and Docks.

6. Office of the Assistant Secretary of Defense for Installations and Logistics memorandum subject "Areas of Responsibility for Military Construction Outside the United States" dated 22 May 1964.

7. "Engineers' Overseas Handbook," United States Department of Commerce, Business and Defense Services Administration, U. S. Government Printing Office, July 1965.

8. "Latin American Business Highlights," Vol. 14 No. 2, Second quarter 1964, The Chase Manhattan Bank.

9. "Time" magazine, Vol. 87 No. 4, January 28, 1966.

10. "U. S. Technical and Capital Assistance in Support of Economic Development in Nigeria," Report as of January 1965, United States Agency for International Development.

11. "West Africa" magazine, Proprietors, Overseas Newspapers, Ltd. (exact edition of reference lost).

APPENDICES

APPENDIX A

Abbreviations and Special Terms

A/E - architect - engineer

AID - United States Agency for International Development (also USAID)

ARD - a small, self-propelled floating drydock

BUDOCKS - Bureau of Yards and Docks, United States Navy

CE - Corps of Engineers, United States Army

CEC - Civil Engineer Corps, United States Navy

COMSOLANT - Commander U. S. Naval Forces South Atlantic

COMTEN - Commandant Tenth Naval District

COMUSNAVSO - Commander U. S. Naval Forces Southern Command

DOD - United States Department of Defense

FRN - The Federal Republic of Nigeria

LA - Latin America or Latin American

MAP - United States Military Assistance Program

MCB - Mobile Construction Battalion, United States Navy

OASD(I&L) - Office of the Assistant Secretary of Defense for Installations and Logistics, U. S. Department of Defense

SEABEES - U. S. Naval Construction Forces

TECHNICAL ASSISTANCE - technical assistance in the form of advice, information and/or services.

The Bureau - The Bureau of Yards and Docks, United States Navy

The Chief of the Bureau - The Chief of the Bureau of Yards and Docks, United States Navy

The Corps - The Civil Engineer Corps, United States Navy

USAID - United States Agency for International Development (also AID)

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APPENDIX B

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